Customer oriented Cargo Facilities –
requirements, drivers and challenges

Ladies and gentlemen,

the first panel this morning has already offered a glimpse of what most likely lies in front of us in terms of air traffic growth, subsequent aviation activity and its economic impact.
While passenger transportation has historically enjoyed more attention, cargo transportation's profile is being raised in the public and political consciousness - as recently evidenced by the remarks of US Transportation Secretary Rodney Slater in Atlanta when referring to the effects of e-Commerce on transportation he said that "You can order Steaks from Omaha online, but you can't download them onto your plate".

Within the freight transportation sector, Air Cargo's importance is on the rise. Much of that must be attributed to the Integrators whose growth continues to outpace that of traditional air cargo, thereby highlighting the urgent need for fundamental changes in that latter market segment.

In the following I will look at developments fostering the evolution of Air Cargo as expressed in new customer requirements and new technologies. I will also try to sketch in general terms the implications we at Lufthansa Consulting believe those developments are going to have on Air Cargo Terminals.

Ladies and gentlemen, at first let us look at some of the trends and developments that we will see in the coming years.
Now that the Y2K-hype is over and the focus has shifted back to business, we begin to realize that we are in for some rather turbulent times, confronting us with an innovative pace faster than ever before, new forms of cooperation along the value chain and a complexity and multitude of organizational structures, processes and products sometimes on the verge of being impossible to handle.

There can be no doubt that humanity is facing the biggest reorganization of its entire supply and disposal system in its history. Last October the officially 6th billionth human being was born, a little boy in Sarayevo.
If the projections are correct, than humanity will have doubled to an unbelievable figure of 12 billion people in the year 2030. With this tremendous growth comes the need for efficient, high performance logistics in order to avoid the collapse of our transportation systems.

At least in some parts of the world and particularly in Central and Northern Europe we can already observe that industrial growth is reaching its limits because the available transportation infrastructure and the way it is being used leave no additional capacity while at the same increasing customer expectations in terms of individualized service keep adding to that pressure due to subsequently higher demand for transportation. Large infrastructure expansion programs as possible remedies are politically very sensitive issues, difficult and lengthy to put into practice.

Let us for a moment look at today's Air Cargo users and their demands before developing new customer profiles and expectations based on changing a market environment.

Today, Air Cargo shipments are primarily business-to-business transactions and the private consumer's importance is comparatively negligible. In the traditional airport-to-airport business forwarders play a dominant role while direct contracts between carriers and shippers remain limited to a few very large customers. And even these deals often include forwarders to cover door-to-airport and airport-to-door transportation, documentation and customs brokerage.
Looking at the Integrators results in a different picture just by the nature of the business where is always just one face to the customer.

It can be expected that the majority of the attributes describing today's market environment and most of the customer demands will also be valid 10 years from now. However, new technologies and their possibilities, particularly in the communication sector, will create additional challenges and chances for all participants involved in the Air Cargo business. Major drivers for change will be the Internet and the proliferation of e-Commerce applications as well as refined Supply-Chain-Management Systems. Not the availability of goods but the ability to transport them to the consumer will become the critical success factor together with time to market performance.
Internet online shopping will lead to a further increase of business-to-consumer transactions, resulting not only in a trend to smaller and more frequent shipments but also to the increased importance of postal and express parcel services.

For the transport service provider the operating environment is likely to be characterized by globally continuing market deregulation, market consolidation and ensuing decline of yields. We have seen this happening in the United States, Europe is currently in this process and other regions will follow suit.

Now, let's have a look at market segmentation for logistics and transportation services. In 1985, there was a clear demarcation of competencies.
Today, these borders have begun to dissolve by providers expanding services beyond their traditional markets. Integrators expand geographically and by eliminating weight limits, postal companies supplement their portfolio by adding logistical services and airlines add new services through vertical integration of forwarding companies. We expect this trend to continue.

Particularly the postal companies with their extensive geographical coverage and dense networks appear to be well prepared to handle the special challenges associated with home deliveries. However, for the transportation across longer distances they are – different from most of the Integrators – dependent on air cargo carriers.

In Europe, through consolidation, aggressive expansion and portfolio development, especially the German and Dutch Postal Companies are transforming themselves into powerful commercial entities. Based on their shipment volumes alone they will become major customers for transportation and handling services, equipped with considerable buying power. We all are anxiously waiting what the next steps of the Deutsche Post AG will be.

The development of the market for logistics services is driven by an increasingly competitive market environment. Although there are differences specific to industrial branches and individual companies, some general findings apply:

- Product life cycles become shorter. Therefore time to market is decisive for product success or failure.
- Markets are characterized by high degrees of transparency and a trend to individual customer demands.
- Further decreasing number of in-house production steps and global sourcing and distribution kick-off a new round of outsourcing by manufacturing companies. This time emphasis will be on the integrated management of logistical processes instead of mere transportation.
- Consolidation in all industries leads to multinational conglomerates. Global communication and transportation networks and the introduction of intelligent Supply Chain Management Systems will enable the short-term shift of production capacity across continents.
- The conflict between the marketing goal of delivering individual products on the one hand and the need for efficient, low-cost production on the other is being solved by shifting value adding steps as far down the supply chain as possible e.g. by customizing modular products on the basis of standardized, mass-produced components.

All this invariably leads to the question what implications these developments will have on the demands that shippers impose on the transport service providers they employ.

The basic requirements may be described best as reliability, quality, on-time performance and value-for-money. With increased outsourcing of supply chain functions this list is complemented by the demand for transparency and flexibility.

The choice of the term “on-time performance” is a clear indication that it is not speed alone but rather the exact and reliable adherence to pre-defined time frames that shippers demand. Transportation providers have reacted by introducing time-definite services that often come with money-back performance guarantees in addition to already established 24 hour overnight services. However, actual performance of the traditional air cargo carriers is still behind expectations.
It must be said that in comparison to the Integrators, the forwarder / cargo carrier combination is lagging behind, not at least caused by the multitude of physical and informatory interfaces that reduce efficiency and give rise to deficiencies of service and performance quality. Unsatisfactory performance in turn has a negative impact on the perceived value for money relationship. Shippers are increasingly reacting to this situation with performance based contracts, meaning that unless the handling of goods, documents and information is to the total satisfaction of the customer, rates will be adjusted to reflect actual performance.

Finally, transparency and flexibility relate to the services offered, the individual processes that they are composed of as well as the availability of pertinent information.
The call for transparency results from the shipper’s demand to have a continuous overview of their supply chain status. The solution primarily consists of open communication and information.
From the customer’s point of perspective, transparency of costs also serves as a sound basis for planning and helps to build trust between the partners.
From the service providers standpoint transparency helps to make the own processes comprehensible and controllable.

Furthermore, continuous transparency is the precondition for flexibility, meaning nothing else but the ability to react quickly to changing customer demands, manifesting e.g. as varying cargo volumes, new cargo structures, changed geographical distribution pattern or additional information tied to shipments.

To sum it up: The basic requirements that transport service providers have to fulfil will remain the same, but their relative importance and their interpretation will reflect the shipper's changing market environment.

In the future,

- Reliability will mean strict adherence to schedules, actual availability of booked space (no offloads) and proactive information in case of irregularities
- Quality means faultless performance and no cargo damage
- On-time performance is equal to guaranteed and kept delivery times along the entire logistics chain
- Value for money implies that only zero defect performance justifies a premium price; in general rates and yields will decline further
- Flexibility means the ability and willingness to quickly adapt to customer requests at any time.

At this point I would like to briefly address the reasons for the discrepancies between claim and reality in Air Cargo handling. Shared responsibility, too many separate processes and interfaces leave quality lagging behind expectations.

In order to counter the ongoing loss of market share to the Integrators, the traditional cargo carrier / forwarder combination must offer shippers true alternatives to those integrated services. To offer door-to-door or at least airport-to-door services, vertical cooperation or integration is the only way to success. The establishment of an own ground transportation company by a cargo carrier or terminal operator is not a feasible alternative due to the high costs and risks associated, especially if it is to provide global coverage.

So – what is to be done and how? How will new customer demands and technologies affect Air Cargo handling, i.e. terminals, processes and personnel?
The answer may be found in the vision of the cargo terminal of the year 2010 which I'd like to share with you now.
For certain is: the customer doesn't care what happens within the black box Air Cargo Terminal, he's only interested in its output, i.e. performance, quality and price.

From a terminal operator's point of view this means that he will have to navigate in an area of conflict between costs, quality, speed, and flexibility and must operate therein economically by employing the best possible combination of available resources, including airport or off-airport real estate.

Critical success factor of this objective will be the continuous streamlining of processes because the distinct reduction of individual steps will lead to improved process quality and reduced costs as utilization of resources decreases and less error related expenses occur. To do so and in order to eliminate all but the crucial processes as well as multiple handling and data capture, all processes must be carefully scrutinized.
The Cargo 2000 initiative followed this approach but unfortunately the project was recently cancelled.

However, one insight remains: Information Technology will play the central role to make future cargo terminals much more efficient and transparent than today's. The future may look like this:

The shipper captures all relevant shipment data and transmits it via Internet to all supply chain participants, i.e. also the transportation service provider who will now schedule shipment pick-up. Booking, airway bill issuance, RF-tag coding and shipment tracking are done over the internet as well.

When approaching the cargo terminal, the truck driver receives directions and his exact unloading dock position on a display in his vehicle. Once parked at the ramp, all shipments will be loaded directly into the previously positioned ULD.

With the general guideline to minimize transportation within the terminal, longer distances will principally be covered only with larger, combined units such as ULDs, while single pieces will be transported only over short distances. Therefore, for build-up a workstation directly at or close to the truck ramp will be used.

By automatically reading the RF-tags of all pieces and the ULD, the first of several shipment status updates within the terminal is initiated and a paperless ULD manifest prepared.
The scanning of barcodes, which is sadly enough still not standard in air cargo handling but also necessitates an additional handling step, is made superfluous.
The principally same procedure is - by the way - used for cargo arriving from the airside where RF-tags are read when entering the terminal and break-down of O&D cargo takes place close to the assigned truck loading ramp.

Shipment accompanying information is of utmost importance for smooth and continuous handling. It must be ascertained that this data is captured at the latest during shipment booking and that it is complete, correct and available at all times.
Belated data capture within the process optimized environment of the future cargo terminal is equal to a loss of efficiency and affects all following handling steps. Due to the lack of buffer times it may ultimately even affect adherence to the time-definite delivery slot.

The dependence of the functionality of British Airways' new World Air Cargo Center at London Heathrow on shipment accompanying data gives only a foretaste of what is to come in that respect. It shows us very clearly how important partnership and cooperation among supply chain participants is for a truly smooth shipping process and highlights one of the major strengths of the Integrators.

The use of Information Technology in the future cargo terminal also implies completely paperless handling. Electronic airway bills will be transmitted from forwarders and shippers. ULD and flight manifests, break-down and build-up lists on paper will be history like all the paper slips currently used for storage and retrieval of goods. Instead, within the terminal and adjacent outside areas, data for handling operations will be transmitted through wireless networks. All data will be centrally stored and permanently accessible to authorized users.

Customs authorities are also going to be integrated into shipment data networks. On the basis of the information preceding the actual shipment, customs clearance will be performed before physical arrival of the shipment. By parallel instead of sequential process steps the total cycle time can be reduced significantly.

The allocation of resources to processes and their real-time supervision will be performed by optimizing algorithms. E.g. will be controlled by a transportation management system that guarantees best use of available resources and shortest transport times and distances. Change of gauge, intermediate storage and change of responsibility are unproductive steps that will be avoided.

As mentioned earlier, to fulfil the requirement of total transparency along the supply chain, the automatically updated shipment status can be retrieved through the internet at any time. If discrepancies to the planned shipping process are observed, the tracking systems will proactively generate an alarm. At the same time it will propose counter measures to restore the desired status or to at least minimize any potential delay. A corresponding message will be sent to the consignee and all parties involved.

When changing the perspective from IT to mechanical equipment, one demand remains the same: flexibility. Fully automatic conveyors, storage and retrieval systems, that are inherently inflexible and require high investments, can only be justified by sufficiently large cargo throughput volumes. Instead mobile equipment such as forklifts and tractors fitted with radio data terminals and controlled by a transportation management system offer the highest degree of flexibility and high productivity at low investment.

Besides throughput the cargo structure plays an important role for the selection of cargo handling equipment. At hub terminals, the earlier mentioned trend towards smaller shipments is going to justify the use of sorting technology that will be able to handle pieces with weights up to 100kgs carefully and reliable. This capability means that also general cargo in transit will increasingly be transshipped through those systems.

For break-down and build-up activities that - due to the normally very heterogeneous cargo structure - have been the domain of manual labor as the most flexible of all handling methods, the more distant future is likely to bring automation in the disguise of manipulation robots. Able to see and feel while having online access to the centrally stored shipment information regarding weight, dimensions and packaging material, these machines will be able to take over most of the strenuous work that is today performed manually.

Besides technical and workflow based differences, the future cargo terminal will feature functional differences compared to today's facilities. As already practiced by the Integrators, cargo terminals will more and more become transshipment instead of storage facilities. With the time-definite delivery slot already known during the booking transaction and relayed to the consignee via Internet, the current need for import storage will cease to exist. Of course, storage services will be available upon customer request, but it will be considered an additional service that entitles the provider to a fee.
It is a long way to develop from air operator to supply chain integrated full service logistics provider. To cover the distance requires a series of evolutionary steps, each adding new functionalities to satisfy additional customer requirements.

Whether associated facility construction will necessarily take place within the airport boundaries remains to be seen. Depending on the availability of space it may be advisable to locate some of the logistics operations off-airport to leave room for expansion of aircraft and passenger handling activities that cannot be relocated elsewhere.
Alternatively, all cargo operations may be transferred to non-passenger hub airports, but for reasons of networking and flexibility this is often not feasible, particularly for combination carrier hubs.

The view into a future cargo terminal would not be complete if it didn't encompass the inseparable aspects of organization and personnel.

Current hierarchic organizational structures are inherently inert and do not provide the necessary flexibility and efficiency. Instead everyone from management to cargo handler must be tied into a process oriented entity that understands itself as a living and learning organization. Rising demands from increasingly complex service portfolios and Information Technology can only that way be met successfully. In this context it goes without saying that a new quality of employee qualifications is as much necessary as a change of attitude towards zero-defect performance and doing it right the first time. Every employee must constantly be aware of his own actions' impact on the overall shipping process. It must further be ensured that adequate training enables the staff to make best possible use of investments made in IT and cargo handling equipment.

Surely, increased employee qualifications cannot be had for free but any measures in this regard normally prove very cost effective. After all, if recourse on employee know how for continuous improvement of processes is not just lip-service, then this leads to lasting savings and motivation - something that particularly in the service sector cannot be undervalued.

Let's summarize to conclude:

- Until 2015 the freighter fleet will double while cargo tonnage will triple. As express and time-definite shipments will grow 18% annually, ground facilities and procedures will have to adapt accordingly.
- Yields for Air Cargo in the traditional sense of airport-to-airport will continue to erode as long as carriers, especially belly carriers, offer below-cost rates. This is not a sound basis for investments in infrastructure, personnel and processes.
- Globally manufactured and distributed products and services require fast and reliable transportation systems. Time-definite Air Cargo will be integral part of supply chain solutions of globally active companies.
- Air Cargo service providers will extend and consolidate their networks through mergers and alliances.
- Restructuring today's sometimes tense relationships between air cargo carriers and forwarders into vertically integrated service partnerships will offer true alternatives to Integrators. However, their competitive lead will be difficult to catch up.
- Transparency of information along the entire transportation process and across all parties involved will be a primary precondition to participate in the growing market for integrated logistics services.
- Organizations, their structures plus qualifications and attitude of the people they are made of have to be oriented towards the future challenges.
- To succeed, future Air Cargo Terminals will have to take all of those developments and challenges into account.